SONY

Integrated Stereo AV Amplifier

Operating Instruction

操作說明

TA-AV650
TA-AV650G

© 1991 by Sony Corporation

WARNING

OWNER'S RECORD

The model and serial numbers are located at the rear. Record these numbers in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No._____ Serial No._____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,

DO NOT REMOVE COVER (OR BACK).

NO USER-SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

* The graphical symbols are on the rear enclosure.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna
Relocate the equipment with respect to the receiver
Move the equipment way from the receiver
Plug the equipment into different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal communications commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Table of Contents

Outline

The TA-AV650/TA-AV650G is an AV amplifier with 5 power amplifiers. You can enjoy various audio and video program sources with this unit.

5 high power amplifiers
To enjoy surround sound system easily, the unit incorporates two 120-W (70-W for U.S.A. model) amplifiers for front speakers, one 120-W (70-W for U.S.A. model) amplifier for center speaker(s), and two 40-W (30-W for U.S.A. model) amplifiers for rear speakers.

Spontaneous twin drive power circuit
Condensers having large capacity are used for the voltage complication drive stage of class A and power output stage of class B. Thus, a stable output and high quality sound are obtained, resulting in exclusion of power interferences. The class A stage realizes a stable operation free from interference of the power stage even when an instantaneous or strong output is received.

Super legato linear system
The power amplifier drives low impedance speakers and assures powerful reproduction without low crossover distortion and switching distortion over the wide range.

Gibraltar chassis
A hard chassis named "Gibraltar" which provides high rigidity and periodic damping characteristics, is employed to reduce distortion caused by vibrations. This reduces air vibrations caused by floor and speakers and also reduces vibrations caused by the power transformer and power transistors.

Digital surround sound system
The TA-AV650/TA-AV650G incorporates a Digital Surround Processor and a Digital Signal Processor. All of 5 types of surround effect – DOLBY*, THEATER, HALL, JAZZ CLUB, and STADIUM have been preset. (Refer to page 18.)

Video and audio control center
• You can control up to 7 video sources – VTRs, a LD player, and a TV (BS) tuner.
• You can add sounds from various audio program sources to video programs using the "MIX" function. (Refer to page 15.)
• You can label to the input selector as you desire. (Refer to page 16.)

Automatic input balance adjusting system
The TA-AV650/TA-AV650G can automatically adjust the input balance on the DOLBY and THEATER surround mode.

Source direct button
A source direct button is employed to reproduce high fidelity sound. Any source can be reproduced without passing through the circuits of surround sound system, tone control, and balance control.

Tone control system for the surround speakers
You can compensate the tone of the surround sounds from front speakers, center speaker(s), and rear speakers independently.

Programmable system commander RM-P650
The supplied remote commander can "learn" the various functions of other infrared type remote commanders.

3

On safety
- Before connecting the unit to an AC outlet, be sure that the operating voltage of your unit is identical with that of your local power supply.
- Should any solid object or liquid fall into the unit, unplug it and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

On installation
- Place the unit on a level surface.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Good air circulation is essential to prevent internal heat buildup in the unit. Place the unit in a location with adequate air circulation.
- Do not place anything on top of the cabinet. The top ventilation holes must be unobstructed for the proper operation of the unit and to prolong the life of its components.

On cleaning the cabinet
Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

On side panels
To detach the side panels, first disconnect the power cord from the wall outlet. Remove the screws on both sides to remove the panels and fasten the supplied screws into the holes on the main unit.

On repacking
Do not throw away the carton and the packing material. It makes an ideal container to transport the unit in.

For the customers in the U.S.A.
For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

If you have any question or problem concerning your unit, please consult your nearest Sony dealer.

Note
When the unit is first set up, when the unit has been unpluged for a long period, or when the microprocessor has been affected by accidental noise, the microprocessor may not operate correctly and the operating function is not displayed correctly in the display panel.
After setting the POWER switch to off, turn on the POWER switch while pressing the SET button. The microprocessor in the unit is reset to initial condition.

Connections

Notes on Connections

- Connect the AC power cord last. Make sure power is off.
- Jacks and plugs of the connection cord are color-coded as follows:
  Red jacks and plugs: for the right channel of audio signals
  White jacks and plugs: for the left channel of audio signals
  Yellow jacks and plugs: for video signals
- The cable connectors should be fully inserted into the jacks. Loose connections may cause hum and noise.

Connecting Audio Equipment

TA-AV650/TA-AV650G

Turntable system

To LINE OUT

Tuner

To LINE OUT

CD player

To LINE OUT

To LINE IN

Tape deck 1

To LINE OUT

To LINE IN

Tape deck 2

5
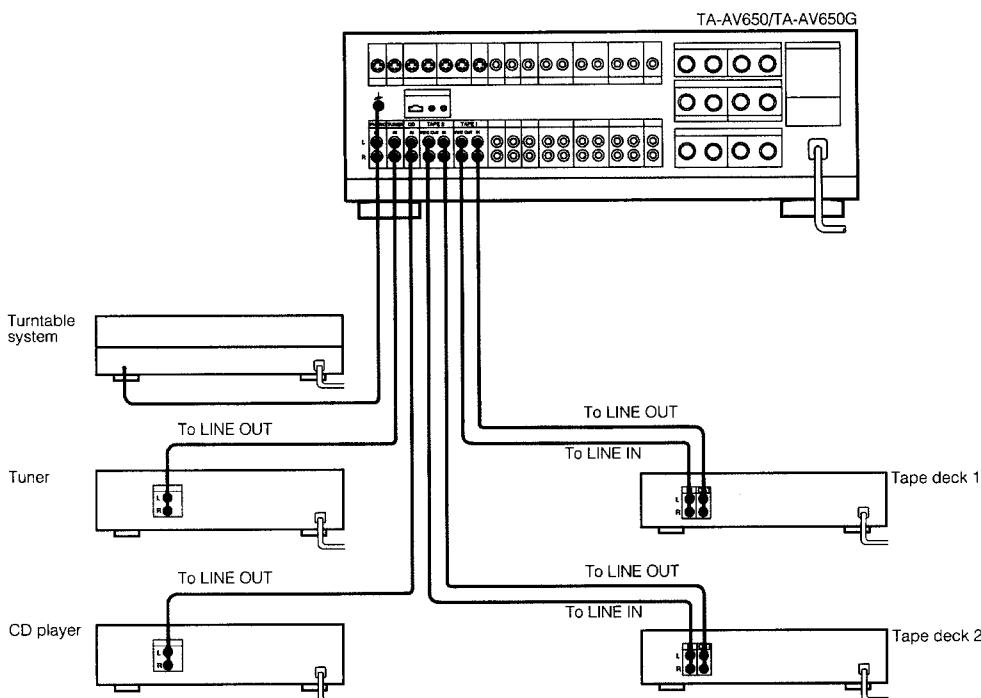
Connecting Video Equipment

The unit has independent input/output circuitries for S-VIDEO and VIDEO IN jacks. Therefore, the video signal input from VIDEO IN does not output for S-VIDEO OUT jacks, and vice versa.

Connecting VCR and monitor TV equipped with the S VIDEO jacks

To S VIDEO OUT

LD player

To S VIDEO OUT

VTR 4 (playback only)

S Video cables
(not supplied)
YC-15EV, etc.

To S VIDEO
IN

Monitor TV

To S VIDEO OUT

To S VIDEO IN
VTR 1

To S VIDEO OUT

To S VIDEO IN
VTR 2

Note
The AUDIO IN/OUT jacks are connected to each equipment for input/output of the audio signal.

TA-AV650/TA-AV650G

To AUDIO/VIDEO OUT

TV (BS) tuner

LD player

VTR 4
(Playback only)

VTR 5 (Camera/recorder)

To AUDIO/VIDEO IN
(on front panel)

To AUDIO/VIDEO
OUT

To AUDIO/VIDEO OUT

Monitor TV

To VIDEO IN

To AUDIO/VIDEO OUT

To AUDIO/VIDEO IN
VTR 1

To AUDIO/VIDEO OUT

To AUDIO/VIDEO IN
VTR 2

To AUDIO/VIDEO OUT

To AUDIO/VIDEO IN
VTR 3

Rear speaker (R)

Rear speaker (L)

Front speaker (R)

Approx. 15 mm

FRONT SPEAKER

TA-AV650/
TA-AV650G

Front speaker (L)

REAR SPEAKER

Connecting Center Speaker(s)

When using two center speakers

Center speaker (R)

Center speaker (L)

CENTER SPEAKER

TA-AV650/
TA-AV650G

7
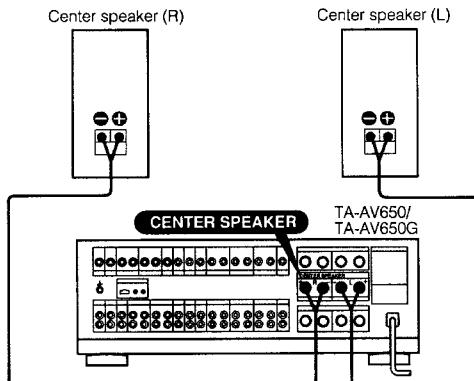
Connections

When using one center speaker

Center speaker

TA-AV650/
TA-AV650G

CENTER SPEAKER
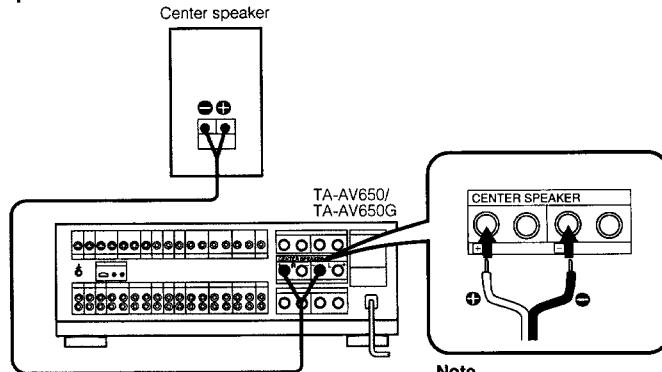
Note
Do not connect to TV's speaker.

When using speaker(s) of monitor TV

TA-AV650/
TA-AV650G

Monitor TV having speaker(s)

Center speaker

CENTER

To AUDIO IN

RK-C71 (3m)
RK-C72 (1m)
(not supplied)
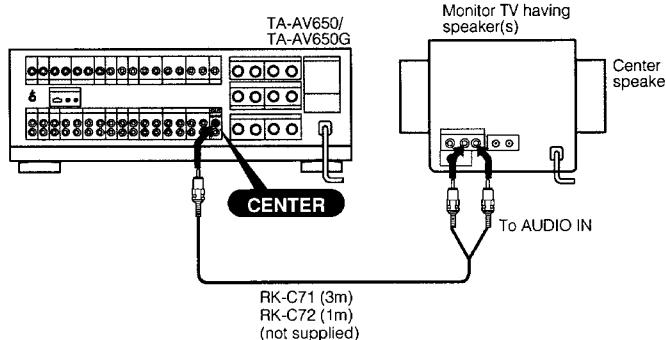
Connecting Subwoofer

Subwoofer
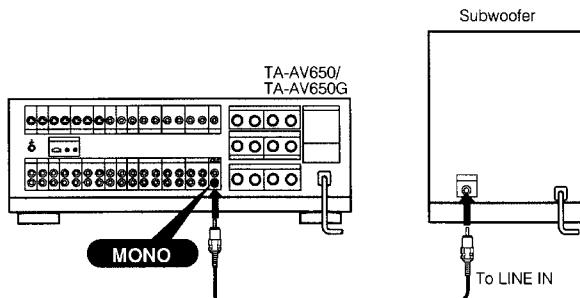
TA-AV650/
TA-AV650G

Note
When using subwoofer not having amplifier, connect through a monaural power amplifier.

MONO

To LINE IN

To control the equipment connected to the TA-AV650/
TA-AV650G with the remote commander, connect the
CONTROL S OUT connector and the CONTROL S IN
connector of each piece of equipment as illustrated below.

Note
When the CONTROL S IN is connected to the CONTROL S
OUT of the video equipment, whole system is controlled
with the remote commander of the video equipment.

For audio equipment

CONTROL S cable
(not supplied)

Tuner

CD player

TA-AV650/TA-AV650G

VTR
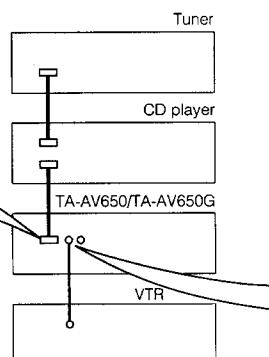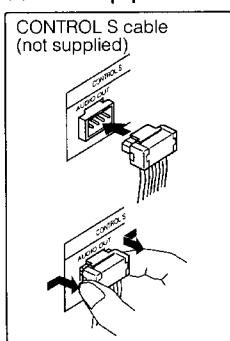
For video equipment

Connection cord with
mini-pin plugs
(not supplied)
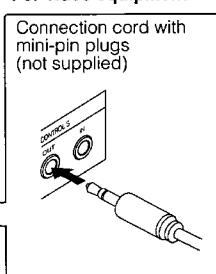
Connecting the AC Power

These are used to power other equipments whose total
power consumption is less than the wattage indicated on
the AC outlets.
SWITCHED: These outlets are controlled with the POWER
switch.
UNSWITCHED: The outlet is not controlled with the
POWER switch. It continually supplies power to any
equipment connected.

Caution
Do not connect electrical home appliance such as an
electric iron, fan, or other high-wattage equipment to these
AC outlets.

TA-AV650/
TA-AV650G

AC OUTLET

To a wall outlet

9
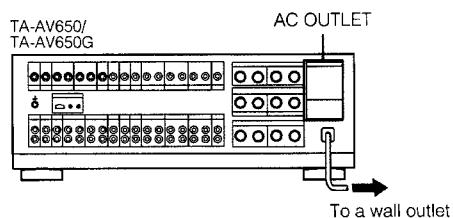
Front Panel
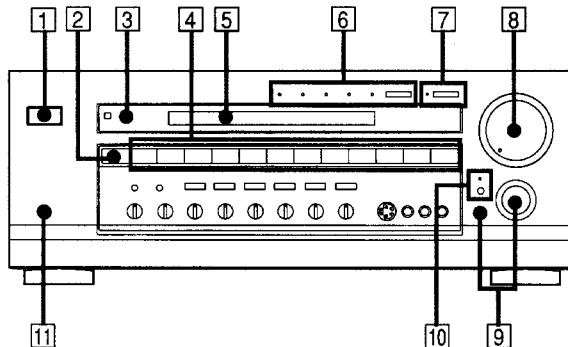
[1] **POWER switch**

Press to turn on the unit. Press again to turn off.

[2] **MIX button**

Press to combine a visual source and an audio source.
(Display: VISUAL source → AUDIO source → off)

[3] **Remote control sensor**

[4] **Input selectors**

Select the program source.

[5] **Display**

[6] **SURROUND MODE selector and indicators**

Selects the surround mode. To set the surround mode
to off, press the selector so that no indicator lights up.
(Display and indicators: DOLBY → THEATER → HALL
→ JAZZ CLUB → STADIUM → off)

[7] **SOURCE DIRECT button and indicator**

To enjoy more pure sound, press the button so that
the indicator lights up. The sound signal of the program
source are directly output to the power amplifier
sections without passing through the surround
processor, tone control, and balance control.

[8] **MASTER VOLUME control and indicator**

Controls the volume level. To increase the volume level,
turn the control clockwise. To decrease the volume
level, turn the control counterclockwise.

Note

Turn down the volume before switching on the unit. This
prevent damage to speakers.

[9] **MODE button and ACOUSTIC control**

Use these when adjusting volume levels of rear and
center speakers, delay time, early reflection time, and
effect level. Press the MODE button to select the
parameter, and turn the ACOUSTIC control to adjust the
parameter.

[10] **MUTING button and indicator**

Press the button to mute the sound. Press again to
resume the sound.

[11] **HEADPHONES jack**

Accepts the stereo phone plug of headphones. The jack
outputs the sound of front speakers only. To listen to the
program source only with the headphones, set the
FRONT/CENTER and REAR SPEAKERS buttons to OFF
(□).

Behind the Panel
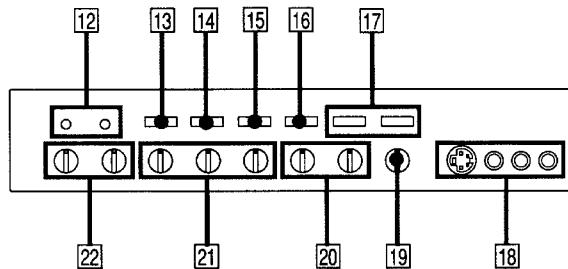
12 SPEAKERS buttons

Normally set these SPEAKERS buttons to ON (◻).
FRONT/CENTER: Turns ON (◻) and OFF (◻) the front
and center speakers.
REAR: Turns ON (◻) and OFF (◻) the rear speakers.

13 DISPLAY MODE button

Press the button to turn on and off the display
information. When the display is turned off, to operate
the other buttons or controls makes all information to
indicate on the display for a few minutes.

14 PRO LOGIC MODE button

Selects the speaker operation mode of DOLBY Pro
Logic function.
(Display: NORMAL → WIDE → PHANTOM → 3 CH.
LOGIC → CENTER OFF)

15 TEST TONE button

Turns on and off the test tone to adjust the balance
among front, rear, and center speakers.

16 CHARACTER button

Labels to input selectors.

17 REC OUT buttons

SET: Sets the desired program source for recording
while you listen to/watch another program source.
CHECK: Displays the program source set with the SET
button.

18 VIDEO 5 input jacks

Accept S-video, video, and audio input signals.

19 BALANCE control

Adjusts the balance of the right and left front speakers.

20 FRONT tone controls

Control the tone quality of the front speakers.
BASS: Adjusts bass sound.
TREBLE: Adjusts treble sound.

21 CENTER tone controls

Control the tone quality of the center speaker(s).
BASS: Adjusts bass sound.
MID: Adjusts middle sound.
TREBLE: Adjusts treble sound.

22 REAR tone controls

Control the tone quality of the REAR speakers.
BASS: Adjusts bass sound.
TREBLE: Adjusts treble sound.

11

Programmable Remote Comander RM-P650
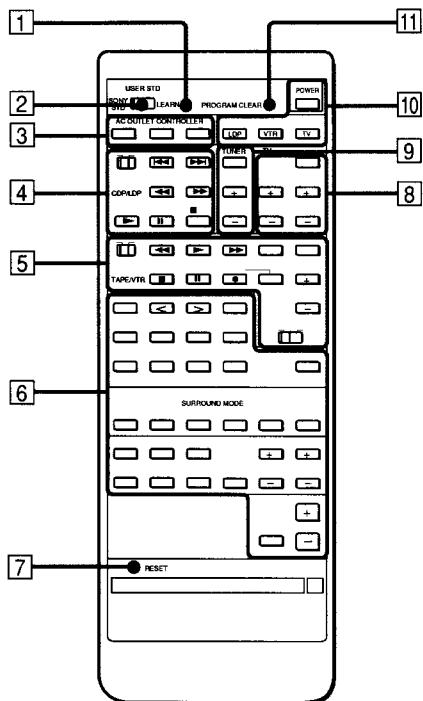

Loading the Batteries

Insert two R6 (size AA) batteries with correct polarity.

1
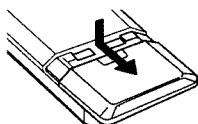
2
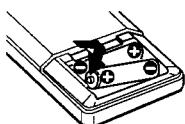
Battery life
About half a year of normal operation can be expected when using the Sony SUM-3 (NS) batteries.
When the batteries are exhausted, the commander can no longer operate the unit. Replace both batteries with new ones.

To avoid battery leakage
When the commander is not to be used for a long period of time, remove the batteries to avoid damage caused by battery leakage and corrosion

To avoid malfunction of the remote commander
Avoid keeping the commander under extremely hot or humid locations.

The RM-P650 can "learn" various functions of other remote commanders which use infrared rays. When the mode selector is set to SONY STD (Sony standard), buttons on the RM-P650 can be used to perform the functions below:

1 LEARN indicator

Lights up when learning functions.

2 MODE selector

SONY STD (standard): To control Sony equipment
USER STD (standard): To control equipment whose remote control functions are stored.
LEARN: To store functions of other remote commanders emitting infrared rays.

3 AC OUTLET CONTROLLER buttons

These buttons does not operate with this unit.

4 CD player/LD player control section

CDP/LDP selector: Selects CD player or LD (Laser Disc) player to be played. The combined CD/LD player can be controlled with this selector set to LDP.
▶: Play
II: Pause
■: Stop
I◀◀/▶▶I: AMS (Automatic Music Sensor)
◀◀/▶▶: Manual search (only for LD player)

5 Tape deck/VTR control section

TAPE/VTR selector: Selects TAPE (tape deck) or VTR to be controlled.
▶: Play
II: Pause
■: Stop
◀◀: Rewind
▶▶: Fast forward
●REC: Recording (Press both ●REC button and the right button for recording.)

Following buttons can be used when the TAPE/VTR selector is set to VTR.
DUAL button: Selects bilingual programs.
ANT (antenna) TV/VTR button: Selects the output signal from the antenna terminal on the VTR, either a TV signal or VTR programs.
CH (channel) +/– buttons: Select channel on the VTR.
VTR 1, 2, and 3 selector: Selects VTR type.
(1: Betamax VTRs,   2: 8 mm VTRs,   3: VHS VTRs)

6 Amplifier control section

VIDEO 1–5, LD, TV, TAPE 1–2, CD, TUNER, PHONO buttons: Selects program sources.
MIX button: Combines a visual source and an audio source.
SURROUND MODE (ON/OFF, DOLBY, THEATER, HALL, JAZZ CLUB, STADIUM) selectors: Selects the surround mode.
MODE button: Selects the parameter.
ACOUSTIC CONTROL buttons: Adjust the parameter.
PRO LOGIC MODE button: Selects a speaker operation mode on the DOLBY Pro Logic mode.
TEST TONE button: Turns on and off the test tone.
CENTER VOL+/– buttons: Adjust the volume level of the center speaker(s).
REAR VOL +/– buttons: Adjust the volume level of the rear speakers.
DISPLAY MODE button: Turns on and off the display information.
DIMMER button: Selects the brightness on the display.
MASTER VOL +/– buttons: Adjust the level from LINE OUT and HEADPHONES jacks.
MUTING button: Mutes the output signal.

7 RESET button

Reset the commander to the initial state.

8 TV control section

TV/VIDEO button: Selects the input signal of the TV.
CH +/– buttons: Select a preset channel.
VOL +/– buttons: Control the TV volume.

9 Tuner control section

BAND button: Selects the frequency band.
PRESET +/– buttons: Selects a higher or lower preset number.

10 POWER buttons

POWER: Turns on and off the TA-AV650/TA-AV650G.
LDP POWER: Turns on and off the LD player.
VTR POWER: Turns on and off the VTR selected by the VTR 1,2,3 selector (usable only when the TAPE/VTR selector is set to VTR).
TV POWER: Turns on and off the TV.

11 PROGRAM CLEAR button

Clears the stored functions.

13

Basic Operation

Preparation
- Turn on the connected audio/video equipment.
- Set the SPEAKERS buttons to ON (□).

SPEAKERS   MUTING

MUTING

---
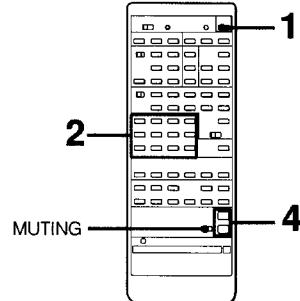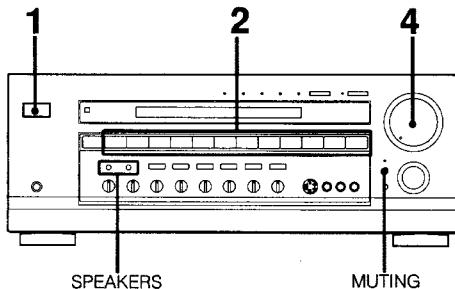
1 Turn on the POWER switch.

POWER

ON/

---

2 Select the program source.

| VIDEO 1 | VIDEO 2 | VIDEO 3 | VIDEO 4 | VIDEO 5 | LD | TV | TAPE 1 | TAPE 2 | CD | TUNER | PHONO |

---

3 Play back the selected program source.

---

4 Adjust the volume level.

MASTER VOLUME

MIN   MAX
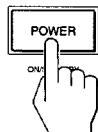
When the MUTING indicator has been lit up
Press the MUTING button to turn it off.
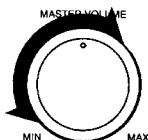
Combining the Video Image with the Sound from Another Program Source

The MIX function allows you to combine a video image with sound from another program source as back ground music.


1

MIX ⇨ ▶ **VISUAL**

2 Select the video source.

VIDEO 1	VIDEO 2	VIDEO 3	VIDEO 4	VIDEO 5	LD	TV

3
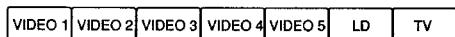
MIX ⇨ **AUDIO** ◀
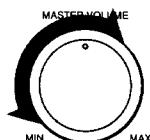
4 Select the audio source. The audio signal of video source can be also selected.

VIDEO 1	VIDEO 2	VIDEO 3	VIDEO 4	VIDEO 5	LD	TV	TAPE 1	TAPE 2	CD	TUNER	PHONO

5 Play back both the video and audio program sources.

6 Adjust the volume level.
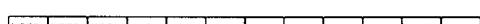
If the MIX button is pressed after both video and audio prgram sources have been set

The mix function is cancelled and the audio and video signals of the selected video program source is output.

15

Putting Your Own Label on Input Selectors

You can put a label of up to 8 characters on an input selector. The label will appear in the display window when a selector is pressed.
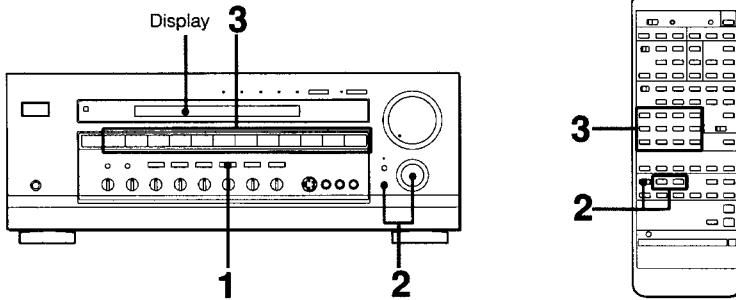

1

CHARACTER
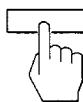
2 Create a name. Three of video selectors may be labeled as VHS, Beta, and 8mm, for example.

To select a letter or number

MODE

To move the cursor

ACOUSTIC CONTROL
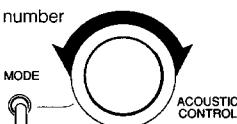
Now, to resume the last name press the CHARACTER button again.

3 Select an input selector to be labeled.

| VIDEO 1 | VIDEO 2 | VIDEO 3 | VIDEO 4 | VIDEO 5 | LD | TV | TAPE 1 | TAPE 2 | CD | TUNER | PHONO |

To resume the original name of the input selector
Repeat steps 1 to 3 to input the original name.

Usable letters and symbols

Space	!	→	#	←	%	&	'	(	)	*	+	,	−	.	/
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
↑	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	II	_
↓	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
p	q	r	s	t	u	v	w	x	y	z					

To resume the preset name of the input selectors
1 Press POWER switch to turn off the unit.
2 While pressing SET button, press the POWER switch to turn of the unit. All setting data in the unit is reset to the factory settings.

16

Getting Ready to Enjoy Surround Sound

Positioning the Speakers

Where you place the speakers depends on the size and acoustics of the listening room.
The figure below are just examples.

We recommend that you experiment to find the speaker direction or location in which the most effective acoustics can be obtained.

For a basic surround system
Two front and two rear speakers are necessary to enjoy the surround function.

Setting rear speakers
Locate the rear speakers at left and right sides or both rear sides, and at high position to spread the rear surround sound.

Front speaker (L)   **Front speaker (R)**

**Rear speaker (L)**   **Rear speaker (R)**
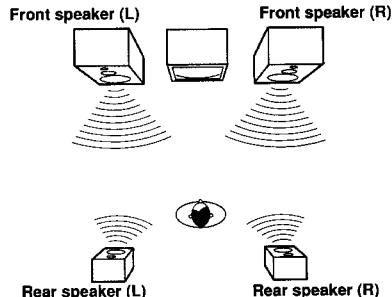
For the Dolby Pro Logic surround system (only DOLBY and THEATER modes)
One or two center speakers are required in addition to the basic four speakers.
When using two center speakers, set the speakers to both sides of TV. The setting on which the vocal image will be located on the center of the TV screen is better affect to surround effect.

To simulate the Dolby Pro Logic effect without using center speaker
Select the PHANTOM mode in DOLBY Pro Logic modes. The sound of the center channel can be heard from the front speakers.

Front speaker (L)   Center speaker(s)   Front speaker (R)

Rear speaker (L)   Rear speaker (R)
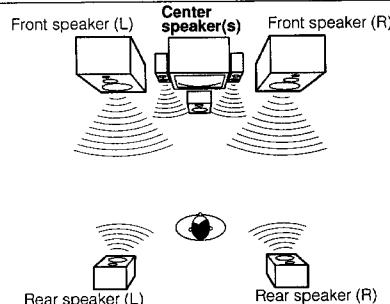
To obtain rich bass sound
Add a subwoofer to above speaker system.

Positioning a subwoofer
Position the subwoofer anywhere forward of your listening position. A deep bass sound is not as directional as the higher frequencies and therefore will not affect the stereo image.

Center speaker(s)
Front speaker (L)   Front speaker (R)

Subwoofer

Rear speaker (L)   Rear speaker (R)
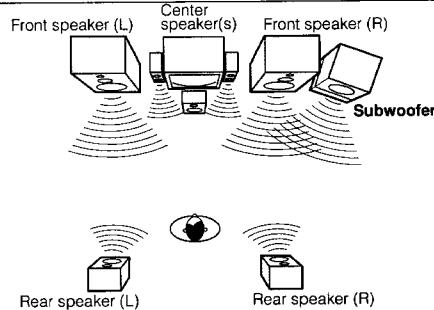
On speaker affinity
To enjoy the surround sound at its best, you should use the same type of speakers for the front, center and rear. If this is not possible, use speakers with the similar efficiency, impedance and sound quality.

17

Getting Ready to Enjoy Surround Sound

Function of the Surround Sound Modes

The TA-AV650/TA-AV650G incorporates Digital Signal Processor and digital surround processor which contains Dolby Pro Logic Decoder. The digital surround processor electronically reproduces the five kinds of surround soundfield programs which have been preset in the factory as shown below. In the DOLBY and THEATER modes, speaker operation modes can be changed with the Dolby Pro Logic Decoder.
You can enjoy the digital surround sound effects easily by just selecting the surround mode according to the program source.

DOLBY mode (using Pro Logic function)

This mode is for reproducing the movie or sound program source processed with Dolby surround system on which the □□[DOLBY SURROUND] mark is labeled. You can hear dynamic sound and natural voice just like listening to it in a movie theater or a concert hall.


THEATER mode (using Pro Logic function)

This mode is for reproducing the movie program source processed with the Dolby surround system. You can hear dynamic sound and natural voice just like listening to it in a movie theater. In the mode, reverberation effect is added to the signal processed through the Dolby Pro Logic Decoder.

### HALL mode

You can hear the naturally acoustic sound having a reverberation effect that is produced in a midium sized concert hall.
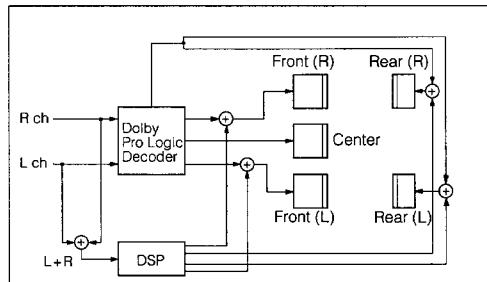

JAZZ CLUB mode

You can hear the powerful and clear sound having an effect that is produced in a jazz club.

STADIUM mode

This mode is for adding the reverberation effect that is felt in an outdoor stadium to a program source recorded in studio.


18
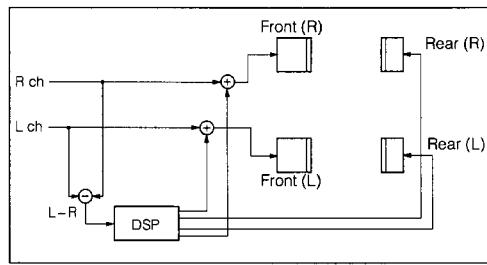
Selecting the Speaker Operation Mode in the Dolby Pro Logic Function (for DOLBY and THEATER Modes)

In the DOLBY and THEATER surround modes, a speaker operation mode can be selected to match your speaker system. Press PRO LOGIC MODE button to select the appropriate mode:

Dolby Pro Logic Mode	Speaker Operating Function
NORMAL	Select this mode if you use small center speaker(s). The bass sound of the center channel is output from the front speakers, as small speaker(s) cannot produce enough bass.
WIDE	Select this mode if you use a medium to big center speaker.
PHANTOM	Select this mode when you do not use center speaker(s). The sound of the center channel can be heard from the front speakers.
3 CH. LOGIC	Select this mode when you do not use rear speakers. The sound of the rear channels can be heard from the front speakers.
CENTER OFF	This mode is only used for checking the input balance in Dolby surround mode. The sound of the center channel, such as voice or vocal, is not heard from the speakers.

NORMAL mode

Front speaker (L) Center speaker(s) Front speaker (R)

Rear speaker (L) Rear speaker (R)

WIDE mode

Front speaker (L) Center speaker Front speaker (R)

Rear speaker (L) Rear speaker (R)

PHANTOM mode

Front speaker (L) Front speaker (R)

Rear speaker (L) Rear speaker (R)

3CH. LOGIC mode

Front speaker (L) Center speaker(s) Front speaker (R)

19
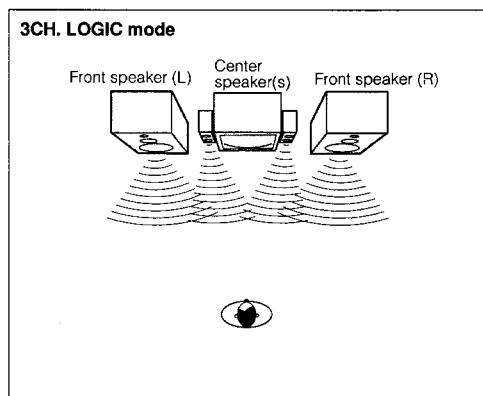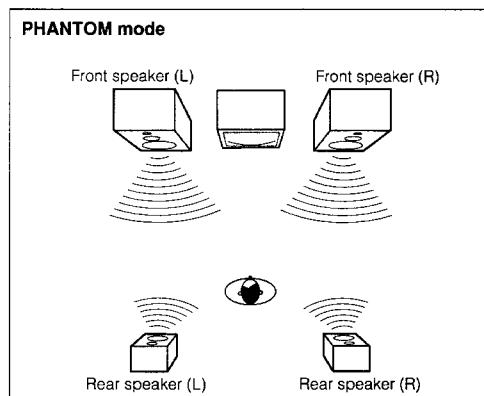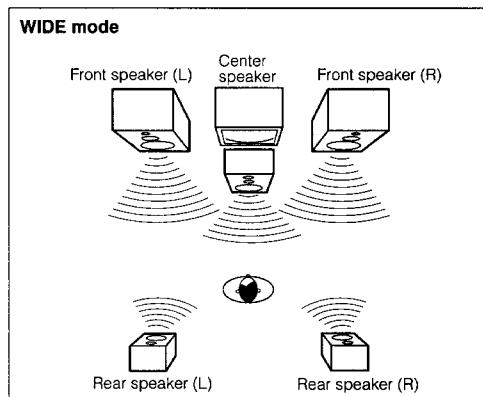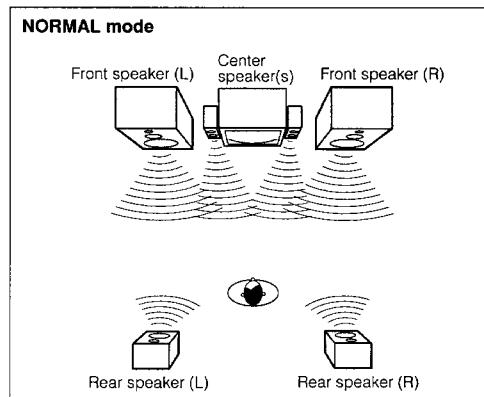
Adjusting the Volume Level of the Surround Speakers for a System with Center Speaker(s)

To enjoy the surround sound sufficiently, adjust the front, rear and center speakers to the same volume level. The adjustment must be done with a test tone in the Dolby surround mode, but the level once adjusted can be used for all surround modes. You can adjust the volume level from your listening position if you use the remote commander.

1 Select DOLBY mode.
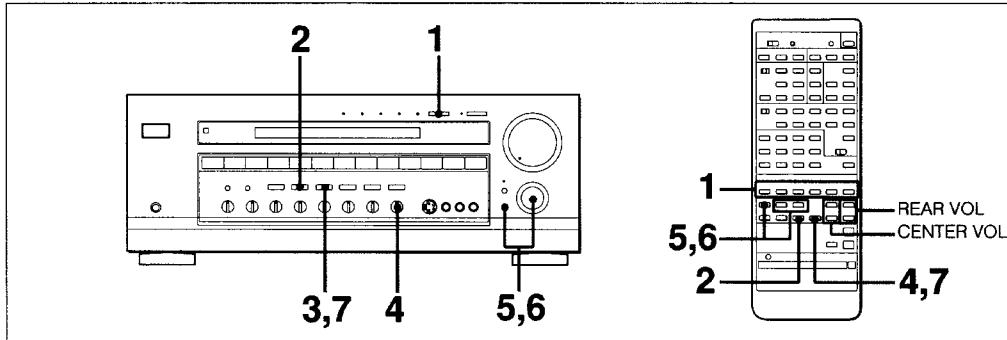
DOLBY THEATER HALL JAZZ CLUB STADIUM SURROUND MODE
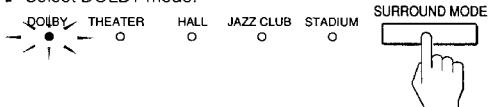
2 Select NORMAL or WIDE mode, depending on the size of your center speaker. (See page 19.)

PRO LOGIC MODE
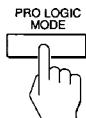
3 TEST TONE — The test tone will be output automatically from the left front [L], center [C], right front [R], and rear speakers [S] in succession.

4 Balance the volume level of the left and right front speakers.

BALANCE

5 Adjust the volume level of the center speakers so that it will be the same as the front and rear speakers. (It can be adjusted with CENTER VOL buttons on the remote commander.)

MODE   ACOUSTIC CONTROL

6 Adjust the volume levels of the left and right rear speakers so that they will be the same as the front speakers respectively. (The volume levels of both channels can be simaltaniously adjusted with REAR VOL buttons on the remote commander.)

MODE   ACOUSTIC CONTROL
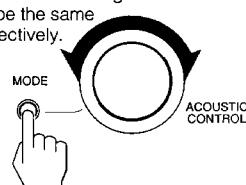
7 Turn off the test tone.
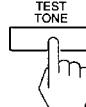
TEST TONE

When not using rear speakers
Press PRO LOGIC MODE button to select 3 CH. LOGIC mode. Press TEST TONE button to output test tone from the left front [L], center [C], right front [R] in succession.

Test tone for a system with center speaker(s)

Front left [L]   Center [C]   Front right [R]

3 CH. LOGIC mode

NORMAL and WIDE modes

Rear left and right [S]

1 Select DOLBY mode.

DOLBY THEATER HALL JAZZ CLUB STADIUM SURROUND MODE
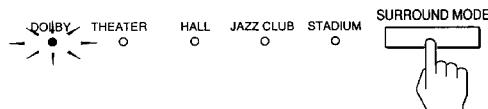
2 Select PHANTOM mode. PRO LOGIC MODE
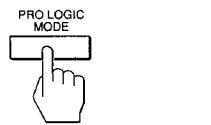
3 The test tone will be output automatically from the front speakers [C] and rear speakers [S] alternatively. TEST TONE
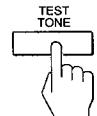
4 Balance the volume level of the left and right front speakers.

L   R
BALANCE

5 Adjust the volume levels of the left and right rear speakers so that they will be the same as the front speakers respectively. (The volume levels of both channels can be adjusted with REAR VOL buttons on the remote commander simaltaniously.)

MODE

ACOUSTIC CONTROL

6 Turn off the test tone. TEST TONE
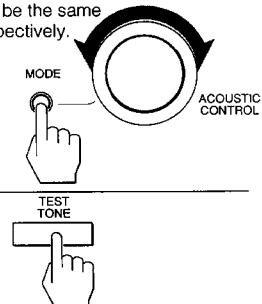
Test tone for a system without center speaker(s)

Front left and right [C]

PHANTOM mode

Rear left and right [S]
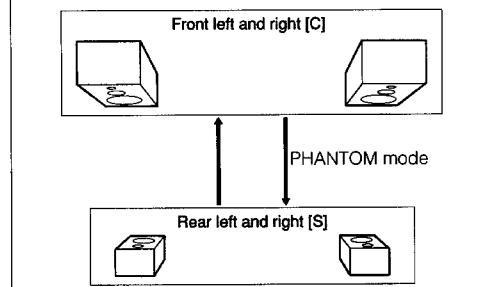
When playing back a Dolby surround processed video tape or video disc, the input level and input balance must be adjusted to obtain the best surround effect.
On the unit, the input balance is automatically adjusted.

21

Enjoying the Surround Sound

Understanding the Digital Surround System

The sound heard in a place such as a concert hall or a movie theater consists of direct sound, an early reflected sound (early reflections) are a reverberative sound (reverberation). The acoustics of the room affects the way these three sounds are heard. We can estimate the size or the type of a hall by listening to an differentiating these three kinds of sound.

The unit reproduces the early reflections and the

reverberation using its digital signal processor and allows you to design a variety of soundfields in your own room.

Note
Each surround mode has several internal (fixed) parameters in addition to the adjustable parameters explained in this section. Therefore, surround modes will not become the same even if you set all adjustable

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Types of the sound

Early reflectins   Reverberation

Direct sound

Transition of the sound

Direct sound

Level

Early reflections   Reverberation

Early reflection time   Time
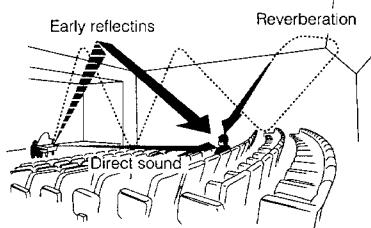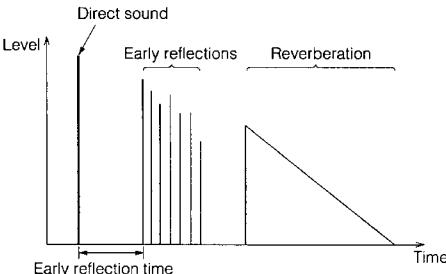
Selecting the Surround Mode

The unit has five surround modes, DOLBY, THEATER, HALL, JAZZ CLUB, and STADIUM modes which have been preset in the factory. Since these programs are appropriate for the most types of music and listening situations, you can

enjoy the digital surround sound effects by just selecting the surround modes according to the program source. You can also adjust several parameters to maximize the effect. (See page 23.)

1

PRO LOGIC MODE

1

PRO
LOGIC
MODE

---
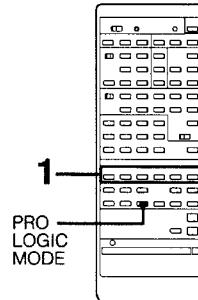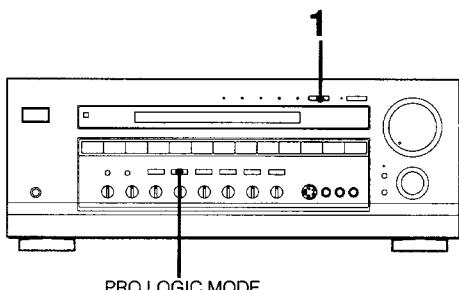
1 Select a surround mode.

DOLBY   THEATER   HALL   JAZZ CLUB   STADIUM   SURROUND MODE

To resume the surround mode
Press the SURROUND MODE selector so that no indicator lights up. On using the remote commander, press the ON/OFF button in SURROUND MODE to turn off the indicator.

When selecting speaker operation modes on the Dolby Pro Logic mode
After selecting the DOLBY or THEATER mode, press the PRO LOGIC MODE button. (See page 19.)

Adjustable Paramerters

The unit reproduces the early reflections and thee reverberation using its digital signal processor and allows you to design a variety of soundfields in your own room. The unit incorporates 5 types of surround modes, and within each mode, you can adjust several parameters to maximize the effect in your listening room.

Before adjusting parameters, play back the program source, and press SURROUND MODE selector to turn on the surround function. You can adjust parameters while listening to the actual sound.

Surround Modes Parameters	DOLBY	THEATER	HALL	JAZZ CLUB	STADIUM
Rear Level	O	O	O	O	O
Center Level	O*1	O*1			
Early Relection Time		O*2	O	O	O
Delay Time	O*2				
Effect Level		O	O	O	O

*1 Center level is not adjusted on the PHANTOM mode in the Dolby Pro Logic modes.

*2 Early reflection time is not adjustable on the 3 CH. LOGIC mode in the Dolby Pro Logic modes.

• Adjusting the rear level and center level is shown on pages 20 and 21.

• Adjusting the delay time is shown on page 24.

• The data of the early reflection time and delay time can be programmed into each surround mode individually. The data of the rear, center, and effect level are same data on all modes.

Adjusting the Tone Quality of Speakers

To enjoy the surround sound sufficiently, adjust the tone of the front, center, and rear speakers respectively to the same quality.

PRO LOGIC MODE **1**

2

1 Select a surround mode.
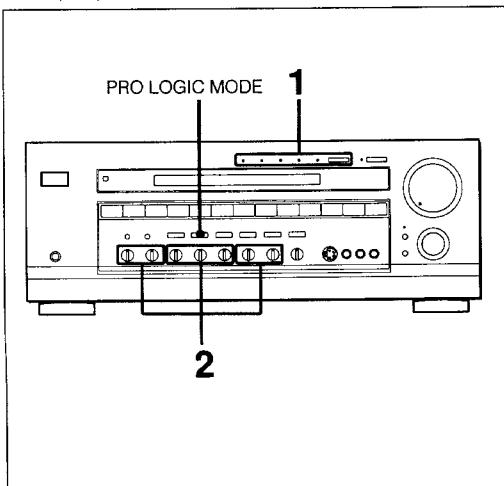
DOLBY   THEATER   HALL   JAZZ CLUB   STADIUM   SURROUND MODE

2 Adjust the tone quality of each speakers.

REAR   CENTER   FRONT

BASS   TREBLE   BASS   MID   TREBLE   BASS   TREBLE

Notes

• You can hear the sound from center speaker(s) only when the DOLBY or THEATER mode is selected.
• The sound from center speaker(s) is not output on the PHANTOM mode in the speaker operation modes.
• The sound from rear speakers is not output on the 3 CH. LOGIC mode in the speaker operation modes.

23

Enjoying the Surround Sound

Adjusting the Delay Time of the Rear Speakers (Only for DOLBY Surround Mode)

The delay time is a time between the surround sound from the front speakers (as direct sound) and that from rear speakers (as reflected sound). The delay time is adjustable from 15 ms to 30 ms. When setting the rear speakers in a large room or apart from your listening position, set the delay time short.
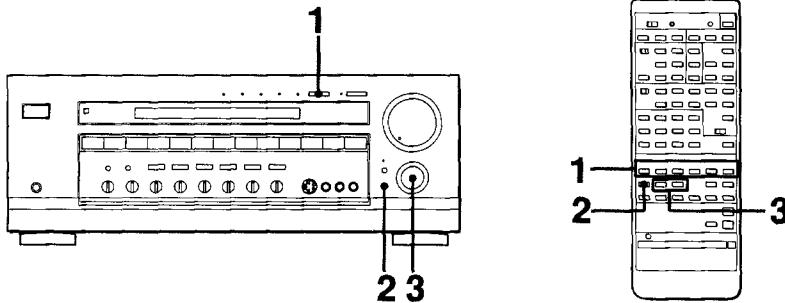
1 Select DOLBY mode.
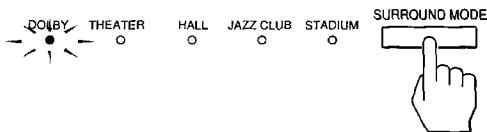
2 Display the delay time mode.

⇨ Del. Time □□mS
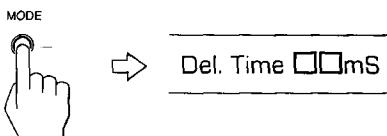
3 Adjust the delay time of the rear speakers.

Note
Adjusting the delay time of the rear speakers is available for the Dolby surround processed source.

Adjusting the Early Reflection Time (Except for DOLBY Surround Mode)

The early reflection time is the key parameter which determines the room size and listening position.
Adjustment of this parameter will vary the time required for the sound to reach to the listening position.
The adjustable range is from 0 ms to 90 ms, and the longer the time, the longer you will feel the distance to the origin of the sound.

When adjusting the parameter
Noise may be output.

Early reflection time
Level   0 mS to 90 mS

Direct
sound   Reflections   Reverberation   Time

SURROUND MODE

1 MODE   ⟹   E.R.Time □□mS
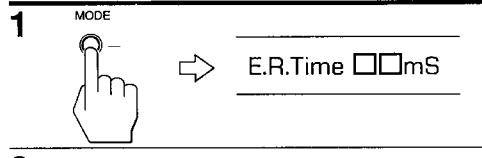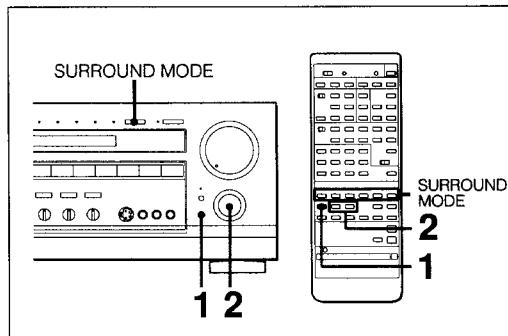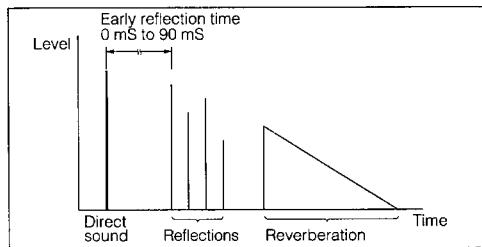
2 Adjust the early reflection time.
The early reflection time is adjustable from 0 ms to 51 ms on the THEATER or JAZZ CLUB mode, and from 0 ms to 90 ms on the HALL or STUDIUM mode.

ACOUSTIC CONTROL

Adjusting the Effect Level (Except for DOLBY Surround Mode)

This parameter adjusts the level of early reflections and reverberation. The adjustable range is from 0 to 10 (100%), and as the number gets larger, the room becomes more "live", and as it gets smaller, the room becomes "dead".

Level
Effect Level
0 to 10

Direct
sound   Reflections   Reverberation   Time

SURROUND MODE
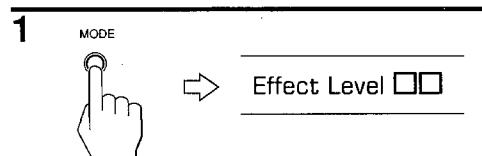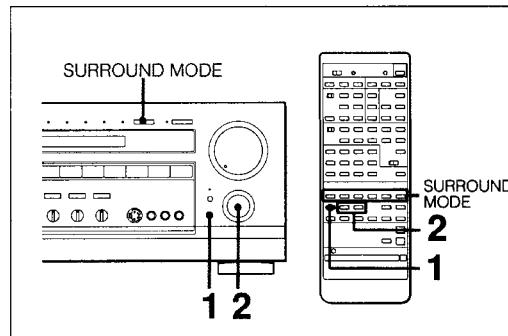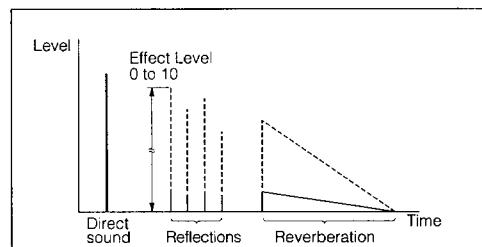
1 MODE   ⟹   Effect Level □□

2 Adjust the effect level.

ACOUSTIC CONTROL

25

Recording Audio/Video Program Sources

Basic Operation

You can operate two or more video or tape decks for recording at the same time as the audio (and video) signals of the program source is output simultaneously through all recording output jacks.
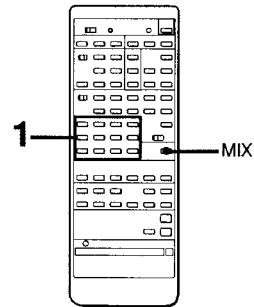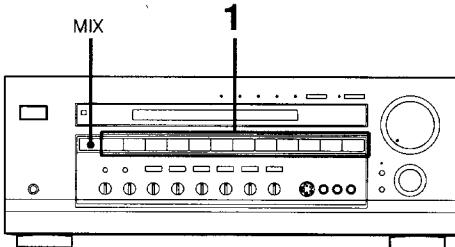
1 Select the video or audio program source.
If you want to combine video image and the sound from another audio source, press the MIX button to select them independently. (See page 15.)

| VIDEO 1 | VIDEO 2 | VIDEO 3 | VIDEO 4 | VIDEO 5 | LD | TV | TAPE 1 | TAPE 2 | CD | TUNER | PHONO |

2 Set the video or tape deck in the recording mode.

3 Play back the selected program source.

This unit has separate circuits for line output and or recording, so you can record a program source while listening to/watching another.

1 Select the program source to be recorded.
If you want to combine a video image and the sound from another audio source, press the MIX button to select these sources independently. (See page 15).

2

3 Play back the selected program source(s) to be recorded and set the video or tape deck into the recording mode.

4 After checking that the REC OUT SET is indicated in the display, select the program source to be listened to/watched.

5 Play back the selected program source(s).

To check the preset recording outputs
Press and hold the CHECK button to display them in the display window.

To record a listening program source
Press the SET button to go off the REC OUT SET indicator. The program source being listened to/watched is output from the REC OUT jacks.

Monitoring while recording
When a 3-head tape recorder is used, the recorded result can be monitored. When the recording is done on a tape recorder connected to the TAPE 1 or TAPE 2 jacks, the recorded sound can be monitored by selecting TAPE 1 or TAPE 2, respectively.

27

Using the Remote Commander

• When you manipulate buttons on the commander, be sure to point the head of the commander toward the remote control sensor on the front of the amplifier.
• If there is an obstacle between the amplifier and the head of the commander, the amplifier may not be controlled remotely.

Programming Signals of Other Audio/Video Equipment with RM-P650

The RM-P650 can learn various functions of other remote commanders emitting infrared rays and allows you to control most of audio and video equipment from a distance.

Insert batteries before operation.

Mode selector
LEARN
indicator

You can program signals for each function by switching the CDP/LDP selector.

You can program signals for each function by switching the TAPE/VTR and VTR(1,2,3) selectors (DUAL, ANT TV/VTR, and CH +/– buttons cannot be programmed when the TAPE/VTR selector is set to TAPE).

RM-P650
RESET button
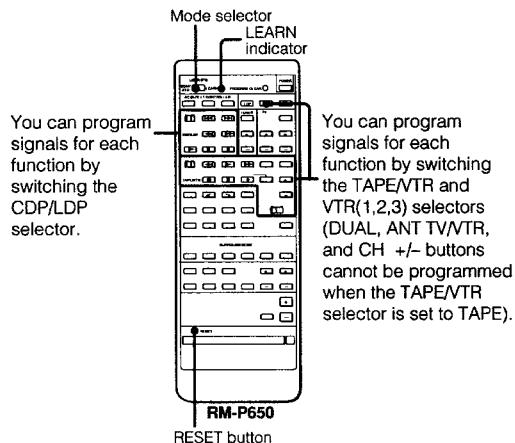
The two remote commanders must:
• be placed straight and head to head.
• be placed at a distance of approx. 5 cm (2 inches).
• not be moved during the programming operation.

Other manufacturer's remote commander

3,4

1,6

LEARN indicator

2,4

Approx. 5 cm
(2 inches)

Programmable
Remote Commander
RM-P650

---
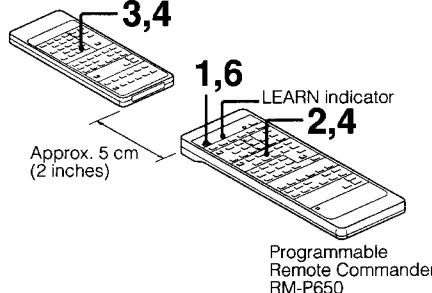
1 Set the mode selector to LEARN.

LEARN

2 Press and hold the button which shall "learn" the remote-control signal until the LEARN indicator lights up.

⇨ LEARN

RM-P650
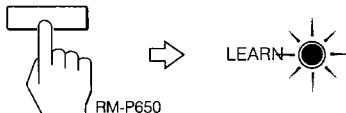
3 Press and hold the button of other manufacturer's remote commander whose signal is to be learned.

Other manufacturer's
remote commander
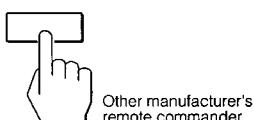
4 Remove your finger(s) from the button(s) after the LEARN indicator goes off.

5 Repeat operation for each button to be programmed.

6 Set the mode selector to USER STD or SONY STD.

USER STD
SONY
STD

After programming
Be sure to test if the equipment really works with the programmed signals.

Number of signals that the commander can learn
It depends on the format of the signal. If you program signals of Sony equipment, approximately 40 – 50 signals can be programmed.

28

If the LEARN indicator flashes or does not go out in steps 2 – 4.

The memory capacity has become full. This occurs when other signals stronger than the remote-control signals have been stored because the signals were programmed in a noisy environment or the remote commanders were placed too far apart from each other.

→ Clear all the signals following the procedure on the right and program again from the beginning under the proper conditions.

Notes on programming

• Remote-control signals of equipment of manufacturers other than Sony can be programmed only when they are compatible with the infrared wireless remote control system. Since the programmable commander can "learn" only the signals output from another remote commander, it cannot control equipment that does not use a remote commander. Also, note that there are some special remote-control signals that cannot be programmed.

• Do not attempt to use the programmable commander with an air conditioner or other household appliances.

To program a new signal onto a previously programmed button

Follow the programming procedure.
The previously programmed signal is cleared and replaced by the new signal.

To clear all programmed signals

1 Set the mode selector to LEARN.
2 Press and hold any button of the programmable area until the LEARN indicator lights up.
3 Press PROGRAM CLEAR until the LEARN indicator flashes and goes off.

Note

It is not possible to clear the programmed content of just one button.

To program a signal onto the ● REC button in the TAPE or VTR section

It is not possible to operate any equipment with only the REC button. To program a signal under the ● REC button, press and hold the following buttons at the same time in step 2.

TAPE or VTR	●REC ▭ ▭
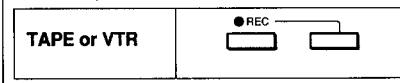
Controlling Equipment

By switching the mode selector as shown below, a single button alternately controls Sony equipment and another manufacturer equipment.
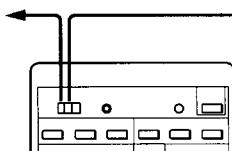
To control Sony equipment		To control equipment with programmed signals
SONY STD		USER STD

When Sony equipment cannot be remote-controlled

Program the signal in the same way as for equipment from other manufacturers. In this case, even with Sony equipment, set the mode selector to USER STD.

Notes on Battery

If the LEARN indicator does not light when a button is pressed, the batteries are almost exhausted.
When the batteries are exhausted, the remote commander can no longer operate the unit or programming becomes impossible.
If this happens, replace both batteries with new ones. We recommend the use of alkaline batteries for prolonged use.

If no signal has been programmed

The programmable commander can control Sony equipment even when the mode selector is set to USER STD.

If the equipment works incorrectly

Press RESET.
The programmed contents of the buttons are not cleared by pressing RESET.

29

Block Diagram

MASTER VOLUME

POWER AMP

VIDEO 1
VIDEO 2
VIDEO 3
VIDEO 4
VIDEO 5
LD
TV
TAPE 1
TAPE 2
CD
TUNER
PHONO

L CH
R CH
EQ AMP

AUTO INPUT BAL- ANCE

Dolby ProLogic Decoder

TEST TONE

ATT
TONE
CENTER OUT
CENTER
TONE
L
FRONT
R
TONE
HEADPHONE
MONO OUT

REC OUT
VIDEO 1
VIDEO 2
VIDEO 3
TAPE 1
TAPE 2

DSP

DOLBY B NR
LPF

ATT
TONE
L
REAR
ATT
TONE
R

VIDEO 1
VIDEO 2
VIDEO 3
VIDEO 4
VIDEO 5
LD
TV

MONITOR OUT

REC OUT
VIDEO 1
VIDEO 2
VIDEO 3

VIDEO CIRCUITRY

VIDEO 1
VIDEO 2

VIDEO 4
VIDEO 5
LD

MONITOR OUT

REC OUT
VIDEO 1
VIDEO 2

S VIDEO CIRCUITRY

REMOTE SENSOR

KEY INPUTS

CPU

POWER SUPPLY

DISPLAY DRIVER IC

FLUORESCENT DISPLAY

AC OUTLETS

AC

POWER OUTPUT AND TOTAL HARMONIC DISTORTION

With 8-ohm load, both channels driven, from 20 – 20,000 Hz, rated 70 watts per channel minimum RMS power, with no more than 0.03% total harmonic distortion from 250 milliwatts to rated output.

Amplifier section

Continuous RMS power output (8 ohms)
    Center: 70 W
    Rear: 30 W + 30 W
Dynamic power output
    Front: 120 W + 120 W (8 ohms, at 1 kHz IHF)
Harmonic distortion at rated output
    Less than 0.03%
Intermodulation (IM) distortion at rated output
    Less than 0.03%
Frequency response
    PHONO: RIAA equalization curve ±0.5 dB
    TUNER, CD TAPE 1, 2, VIDEO 1 - 5, LD, TV:
    10 Hz - 100 kH $^{+0}_{-3}$ dB
Residual noise Less than 90 μV
Damping factor 50 (8 ohms, at 1 kHz)
S/N   TUNER, CD TAPE 1, 2, VIDEO 1 - 5, LD, TV:
    92 dB(A)

Video section

Input

Input jack		Sensitivity	Impedance
VIDEO	VIDEO 1, 2, 3, 4, 5, LD, TV	1 Vp-p	75 ohms
S-VIDEO	VIDEO 1, 2, 4, 5, LD	Luminance (Y): 1 Vp-p/75 ohms Chroma (C): 0.285 Vp-p/75 ohms	

Output

Output jack		Sensitivity	Impedance
VIDEO	VIDEO 1, 2, 3, MONITOR	1 Vp-p	75 ohms
S-VIDEO	VIDEO 1, 2, MONITOR	Luminance (Y): 1 Vp-p/75 ohms Chroma (C): 0.285 Vp-p/75 ohms	

Audio section

Input

Input jack	Sensitivity	Impedance
PHONO	2 mV	50 kohms
TUNER, TAPE 1, 2, VIDEO 1, 2, 3, 4, 5, LD, TV, CD,	150 mV	50 kohms

Output

Output jack	Output level	Impedance
TAPE 1, 2, VIDEO 1, 2, 3,	150 mV	470 kohms
MONO	1 V	—
CENTER	6 V	1 kohm
HEADPHONES	3 mW/ 8 ohms	Accepts low and high impedance headphones.

Equalizer   FRONT: BASS (100 Hz) ±10 dB
         TREBLE (10 kHz) ±10 dB
      CENTER: BASS (100 Hz) ±10 dB
         MID (1 kHz) ±6 dB
         TREBLE (10 kHz) ±10 dB
      REAR: BASS (100 Hz) ±10 dB
         TREBLE (10 kHz) ±10 dB
Surround   E.R.Time (HALL, STADIUM):
       0 to 90 ms at interval of 3 ms
      E.R.Time (THEATER, JAZZ CLUB):
       0 to 51 ms at interval of 3 ms
      Effect Level: 0 to 100% (11 steps)
      Delay Time: 15 ms to 30 ms at interval of 3 ms
      Rear Level: 0 to -60 dB, -∞, at interval of 1 dB
      Center Level: 0 to -60 dB, -∞, at interval of 1 dB
      Input balance: Automatically adjusted

General

Power requirements
    120 V AC, 60 Hz
Power consumption
    250 W
AC outlets 2 switched, total 300 W
    1 unswitched, 300 W max.
Dimensions 470 x 165 x 430 mm (w/h/d)
    (18$^{1}/_{2}$ x 6$^{1}/_{2}$ x 17 inches)
Weight   17 kg (37 lb 7 oz)
Supplied accessories
    Remote commander RM-P650 (1)
    Sony Batteries SUM-3 (NS) (2)
    Screws (8)

Design and specifications subject to change without notice.

31

Amplifier section

Power output (6 ohms, at 1 kHz)
Front: 120 W + 120 W
Center: 120 W
Rear: 40 W + 40 W

Continuous RMS power output
Front: 70 W + 70 W (6 ohms, 20 Hz- 20 kHz, THD 0.03%)

Harmonic distortion at rated output
Less than 0.03%

Intermodulation (IM) distortion at rated output
Less than 0.03%

Frequency response
PHONO: RIAA equalization curve ±0.5 dB
TUNER, CD TAPE 1, 2, VIDEO 1 - 5, LD, TV:
10 Hz - 100 kHz $^{+0}_{-3}$ dB

Residual noise   Less than 90 µV

S/N   TUNER, CD TAPE 1, 2, VIDEO 1 - 5, LD, TV:
92 dB(A)

Video section

Input

Input jack		Sensitivity	Impedance
VIDEO	VIDEO 1, 2, 3, 4, 5, LD, TV	1 Vp-p	75 ohms
S-VIDEO	VIDEO 1, 2, 4, 5, LD	Luminance (Y): 1 Vp-p/75 ohms Chroma (C): 0.285 Vp-p/75 ohms	

Output

Output jack		Sensitivity	Impedance
VIDEO	VIDEO 1, 2, 3, MONITOR	1 Vp-p	75 ohms
S-VIDEO	VIDEO 1, 2, MONITOR	Luminance (Y): 1 Vp-p/75 ohms Chroma (C): 0.285 Vp-p/75 ohms	

Audio section

Input

Input jack	Sensitivity	Impedance
PHONO	2 mV	50 kohms
TUNER, TAPE 1, 2, VIDEO 1, 2, 3, 4, 5, LD, TV, CD,	150 mV	50 kohms

Output

Output jack	Output level	Impedance
TAPE 1, 2, VIDEO 1, 2, 3,	150 mV	470 kohms
MONO	1 V	—
CENTER	6 V	1 kohm
HEADPHONES	3 mW/ 8 ohms	Accepts low and high impedance headphones.

Equalizer   FRONT: BASS (100 Hz) ±10 dB
TREBLE (10 kHz) ±10 dB
CENTER: BASS (100 Hz) ±10 dB
MID (1 kHz) ±6 dB
TREBLE (10 kHz) ±10 dB
REAR: BASS (100 Hz) ±10 dB
TREBLE (10 kHz) ±10 dB

Surround   E.R.Time (HALL, STADIUM):
0 to 90 ms at interval of 3 ms
E.R.Time (THEATER, JAZZ CLUB):
0 to 51 ms at interval of 3 ms
Effect Level: 0 to 100% (11 steps)
Delay Time: 15 ms to 30 ms at interval of 3 ms
Rear Level: 0 to -60 dB, -∞, at interval of 1 dB
Center Level: 0 to -60 dB, -∞, at interval of 1 dB
Input balance: Automatically adjusted

General

Power requirements
220 V AC, 50/60 Hz
Power consumption
260 W
AC outlets   2 switched, total 300 W
1 unswitched, 300 W max.
Dimensions   470 x 165 x 430 mm (w/h/d)
Weight   16.4 kg
Supplied accessories
Remote commander RM-P650 (1)
Sony Batteries SUM-3 (NS) (2)
Screws (8)

Design and specifications subject to change without notice.

32

Troubleshooting

Before proceeding through the check list below, first refer back to the connection and operating procedures.
Should any problem persist after you have made these checks, consult your unrest Sony dealer.

	Trouble	Possible Causes
	Power cannot be turned on.	• Check if the power cord is disconnected from the power outlet.
	No function.	• Disconnect the power cord, and then connect it again. While pressing the SET button, turn on the POWER switch to reset the unit. (See page 16.)
Audio	No audio.	• Check for faulty connection. (See pages 5 to 9.) • Check for SPEAKERS buttons are set to OFF (□). • Check for short-circuited speaker terminals. • Check that the input selectors are correctly selected. • Check if the MUTING button has been pressed – the indicator is lit. (See page 14.) • Check if the CENTER OFF mode is selected in the DOLBY Pro Logic mode. (See page 19.)
	No sound or sound at very low level is heard from rear speakers.	• Check if the SURROUND MODE selector is set to off – no indicators are lit. (See page 23.) • Check if the volume level of the rear speakers are set to minimum. • Check if the monaural program source is played back in Dolby surround mode. • Check if the 3 CH. LOGIC mode is selected in the DOLBY Pro Logic mode. (See page 19.) • Check if the SOURCE DIRECT button is set to off – the indicator is lit.
	No audio from one channel.	• Check if the BALANCE control is set to an extreme position. • Check if the speaker cord or connection cord is disconnected.
	Distorted audio.	• Check if the audio volume setting is above the maximum permissible input of the speakers.
	Obscure instrument positioning, which lack of bass sound.	• Check if the positive (+) speaker terminal on the main body is not connected to the negative (–) terminal on the speaker, and vice versa.
	Hum or noise.	• Check that the grounding wire of the turntable is connected securely. • Check that the connection cords are inserted securely into jacks.
Video	No video.	• Check that the connections are correct. (See page 6.) • Check that the input selectors are correctly selected.
	Unclear video, low image quality.	• Check if there is any nearby source of noise.
Programmable Commander	Remote-control operation cannot be performed.	• Check that the batteries are loaded correctly. (See page 12.) • Check if there is any obstacle between the programmable commander and amplifier. (See page 28.) • Check if the batteries are exhausted. • Check if the mode selector is set to USER STD in remote-control operation using programmed signals. (See page 29.)
	The remote-control signal cannot be programmed. The LEARN indicator does not light.	• Place both remote commanders apart from the source of noise. • The batteries are exhausted. (See page 29.)
	The LEARN indicator goes off after flashing.	• The internal memory capacity is full. (See page 29.)

33